

A Study on the Impact of Sustainability on Modern Marketing Strategies with Reference to the Retail Sector in Prayagraj

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ABSTRACT

The growing emphasis on environmental consciousness, ethical consumption, and corporate social responsibility has significantly reshaped the landscape of modern marketing. This study examines the impact of sustainability-driven marketing strategies on consumer behaviour, brand perception, and business performance within the retail sector of Prayagraj, Uttar Pradesh. As an emerging Tier-2 city undergoing rapid urbanisation and retail transformation, Prayagraj presents a distinctive context for understanding how sustainability principles are being adopted, communicated, and received in non-metropolitan India. Drawing on primary data from 200 consumer surveys and 20 retailer interviews, the study adopts a mixed-method design. Findings reveal an awareness-behaviour gap, with younger consumers (18–35) showing significantly higher responsiveness to green marketing. Retailers embedding sustainability authentically achieve stronger customer engagement and repeat purchase rates. The study offers context-sensitive recommendations for retailers, brand managers, and policymakers.

Keywords: Sustainability Marketing · Green Retail · Consumer Behaviour · Prayagraj · CSR · Eco-labelling · Sustainable Consumption · Emerging Markets · Retail Sector India · Mixed-Method Research.

1. Introduction

The concept of sustainability has undergone a profound evolution — from a niche environmental concern to a mainstream business imperative. Across industries, organisations are increasingly recognising that long-term viability depends not solely on profit maximisation, but on the responsible stewardship of natural resources, equitable treatment of communities, and transparency in corporate conduct. Within marketing, this shift has given rise to the paradigm of sustainable marketing — an approach that integrates environmental and social considerations into the design, communication, and delivery of value to consumers. India, as one of the world's fastest-growing consumer markets, stands at a critical inflection point. With a rapidly expanding

middle class, rising digital penetration, and heightened post-pandemic awareness of environmental vulnerabilities, Indian consumers are beginning to factor sustainability into their purchase decisions — albeit unevenly across geographies, income groups, and demographic segments. While metropolitan cities like Mumbai, Delhi, and Bengaluru have witnessed significant green marketing activity, the dynamics in Tier-2 and Tier-3 cities remain considerably less studied. Prayagraj — historically known as Allahabad — occupies a unique position in this landscape. A city of deep cultural, religious, and educational significance, Prayagraj has experienced accelerated retail expansion in recent years, driven by urban migration, improved connectivity, and the economic multiplier effects of the Kumbh Mela and Ardh Kumbh. Modern retail formats, FMCG chains, and lifestyle brands have increasingly entered the market, creating a context in which traditional consumption patterns coexist with emerging aspirations.

1.1 Research Background

Despite growing global interest in green marketing, the academic literature reveals a conspicuous gap in empirical studies focusing on sustainability marketing in non-metropolitan Indian retail contexts. Most extant research either adopts a national-level perspective or confines itself to major urban centres. The socio-economic heterogeneity, price sensitivity, and cultural consumption norms that characterise cities like Prayagraj warrant dedicated investigation, as findings from metropolitan contexts may not be directly generalisable.

Sustainability has emerged as one of the most influential concepts shaping modern business practices across the world. In the twenty-first century, organizations are no longer evaluated solely on the basis of profitability but also on their environmental responsibility, social commitment, and ethical governance. The increasing concerns regarding climate change, depletion of natural resources, environmental pollution, and changing consumer expectations have encouraged businesses to integrate sustainability into their core strategies. As a result, sustainability has evolved from being a corporate social responsibility initiative to becoming a strategic tool for achieving long-term competitive advantage. Modern marketing strategies increasingly emphasize sustainable practices that create value not only for customers but also for society and the environment.

Marketing has traditionally focused on identifying customer needs and satisfying them profitably. However, contemporary marketing has expanded beyond economic objectives to

include environmental and social responsibilities. Sustainable marketing promotes products and services in ways that protect natural resources, encourage responsible consumption, and contribute to the welfare of future generations. It integrates the principles of environmental protection, social equity, and economic development into every stage of marketing, including product design, pricing, distribution, promotion, and customer relationship management. Companies are increasingly adopting eco-friendly packaging, ethical sourcing, waste reduction, renewable energy, and transparent communication to strengthen their market position and build customer trust.

The retail sector plays a vital role in implementing sustainable marketing because it directly connects manufacturers with consumers. Retailers influence purchasing decisions through product assortment, store layout, promotional campaigns, pricing strategies, packaging, and customer engagement. As consumer awareness regarding environmental conservation and ethical consumption continues to grow, retailers are under increasing pressure to adopt sustainable business practices. Organized retail businesses have begun introducing biodegradable packaging, reusable shopping bags, energy-efficient stores, responsible sourcing, digital billing systems, and recycling initiatives to minimize their environmental impact while improving customer satisfaction.

In India, sustainability has become an important agenda due to rapid urbanization, industrial growth, increasing environmental challenges, and changing consumer preferences. Government initiatives promoting sustainable development, renewable energy, waste management, plastic reduction, and responsible business practices have further encouraged organizations to incorporate sustainability into their operations. Indian retailers, including supermarkets, departmental stores, fashion retailers, grocery chains, and local businesses, are increasingly recognizing that sustainability contributes to stronger brand image, customer loyalty, operational efficiency, and long-term profitability. Consumers, particularly younger generations and educated urban populations, increasingly prefer brands that demonstrate environmental responsibility and ethical business practices.

Modern marketing strategies have therefore undergone significant transformation. Traditional marketing emphasized product features, competitive pricing, and promotional activities, whereas sustainable marketing focuses on creating long-term relationships with customers by addressing environmental and social concerns. Green branding, ethical advertising, sustainable packaging,

responsible sourcing, digital marketing, and transparent communication have become essential elements of successful marketing strategies. Businesses now seek to balance commercial objectives with environmental sustainability, recognizing that responsible practices contribute to improved corporate reputation, increased customer retention, and stronger stakeholder relationships.

The retail industry has experienced substantial growth in recent years due to rising disposable income, digital transformation, expanding urban markets, and changing lifestyles. Alongside this growth, consumers have become more conscious of the environmental and social impacts of their purchasing decisions. Factors such as recyclable packaging, organic products, fair trade practices, reduced plastic usage, locally sourced goods, and energy-efficient retail operations increasingly influence buying behaviour. Consequently, retailers are redesigning their marketing strategies to communicate sustainability initiatives more effectively and differentiate themselves from competitors. Research indicates that sustainability initiatives can positively influence consumer trust, brand loyalty, and purchase intentions when implemented authentically and communicated transparently.

The city of Prayagraj represents an important commercial centre in Uttar Pradesh, characterized by a diverse retail landscape consisting of traditional markets, organized retail outlets, supermarkets, shopping complexes, and small independent retailers. The city's expanding urban population, increasing literacy levels, and changing consumer lifestyles have created opportunities for retailers to adopt innovative and sustainable marketing practices. Growing awareness regarding environmental conservation, waste management, and responsible consumption has gradually influenced customer expectations within the local retail sector. In recent years, Prayagraj has also witnessed several sustainability-oriented urban and environmental initiatives, reflecting increasing public attention toward environmentally responsible development.

Retail businesses operating in Prayagraj are increasingly exploring sustainability through various initiatives such as reducing plastic consumption, encouraging reusable bags, adopting digital payment systems, minimizing paper usage, promoting locally produced goods, improving waste management practices, and creating environmentally friendly shopping environments. Although these practices vary across organized and unorganized retailers, they collectively demonstrate the growing importance of sustainability as a marketing strategy. Understanding how these

sustainability initiatives influence customer perceptions, purchasing behaviour, brand preference, and business performance is essential for retailers seeking long-term competitiveness in the evolving marketplace.

The concept of sustainable marketing extends beyond environmental protection to include social responsibility and economic sustainability. Businesses are expected to operate ethically by ensuring fair labour practices, supporting local communities, maintaining transparency, and contributing positively to society. Consumers increasingly evaluate companies based not only on product quality and price but also on their ethical values and social commitments. As a result, sustainability has become an integral component of brand identity and corporate reputation.

From an academic perspective, sustainability and marketing have attracted significant research attention over the past decade. However, much of the existing literature focuses on national or international markets, while limited empirical evidence is available regarding medium-sized Indian cities such as Prayagraj. Consumer awareness, purchasing behaviour, retail infrastructure, and business practices differ across regions, making localized studies essential for generating meaningful insights. Examining sustainability within the retail sector of Prayagraj will contribute to the existing body of knowledge by providing region-specific evidence regarding the relationship between sustainability initiatives and modern marketing strategies.

The present study, titled "A Study on the Impact of Sustainability on Modern Marketing Strategies with Reference to the Retail Sector in Prayagraj," seeks to examine the extent to which sustainability influences marketing practices adopted by retailers and the responses of consumers toward these initiatives. The study will investigate various dimensions of sustainability, including environmental responsibility, green marketing, ethical business practices, customer awareness, and sustainable consumption. It will also analyze how these factors contribute to customer satisfaction, brand loyalty, competitive advantage, and business performance within the retail sector.

Furthermore, the findings of this research will be beneficial to retailers, marketing professionals, policymakers, academicians, and researchers by providing practical recommendations for integrating sustainability into marketing strategies. Retail businesses can utilize the insights to strengthen customer relationships, improve brand reputation, and achieve sustainable growth. Policymakers may also use the findings to promote environmentally responsible business practices and encourage sustainable economic development at the local level.

1.3 Significance of the Study

This study makes a three-fold contribution. Theoretically, it extends the Green Marketing and Consumer Behaviour literature to an under-researched Tier-2 Indian city context. Practically, it provides retailers with evidence-based insights to calibrate their sustainability communication strategies. At the policy level, it offers guidance to local government and retail associations seeking to foster responsible consumption in alignment with India's national sustainability goals and the UN Sustainable Development Goals (SDGs), particularly SDG 12 (Responsible Consumption and Production).

2. Literature Review:

2.1 Concept of Sustainable Marketing

Sustainable marketing, as defined by Kotler and Armstrong (2018), refers to marketing that meets the present needs of consumers and businesses while preserving the ability of future generations to meet their own needs. It extends the traditional marketing concept by adding ecological and societal dimensions to the classic economic objective of customer satisfaction. Peattie and Crane (2005) distinguish between 'green marketing' — primarily focused on ecological concerns — and the broader 'sustainable marketing' paradigm, which encompasses social equity, fair trade, and long-term stakeholder value creation.

Polonsky (1994) conceptualised green marketing as encompassing all activities designed to generate and facilitate exchanges intended to satisfy human needs with minimal detrimental impact on the natural environment. Subsequent scholars have broadened this to include the Triple Bottom Line framework (Elkington, 1997), which demands corporate accountability across people, planet, and profit dimensions simultaneously.

2.2 Consumer Behaviour and Green Purchase Intention

A substantial body of literature has examined the antecedents of green purchase intention and behaviour. The Theory of Planned Behaviour (Ajzen, 1991) provides a foundational framework, positing that attitudes, subjective norms, and perceived behavioural control collectively predict purchase intention. Applied to green consumption, this implies that consumers' environmental attitudes, social pressure towards eco-friendly choices, and perceived ease of accessing sustainable alternatives jointly determine their willingness to choose green products.

Empirical studies have consistently identified an attitude–behaviour gap in green consumption — where favourable attitudes towards sustainability do not always translate into corresponding purchase decisions. Key mediating factors include: price premium sensitivity (Follows and Jobber, 2000), lack of trust in green claims (Chen, 2010), limited product availability, and habitual purchasing patterns. In the Indian context, Jain and Kaur (2006) found that environmental concern, social norms, and eco-label familiarity were significant predictors of green buying, while income level and education moderated these effects.

2.3 Greenwashing and Authenticity in Green Marketing

A critical challenge in sustainable marketing is the phenomenon of greenwashing — the practice of making misleading or unsubstantiated environmental claims to gain competitive advantage (Delmas and Burbano, 2011). Consumers who perceive greenwashing develop negative brand attitudes and reduced purchase intentions, undermining the broader project of sustainable marketing. Lyon and Maxwell (2011) identify four drivers of greenwashing: lax regulatory oversight, consumer credulity, competitive pressure, and ambiguous environmental standards.

In contrast, brands that communicate sustainability authentically — through transparent disclosure, third-party certification, and consistent alignment between stated values and business practices — generate significantly higher consumer trust, brand equity, and loyalty (Chen and Chang, 2013). This suggests that authenticity of sustainability communication is not merely an ethical imperative but a commercially decisive variable.

2.4 Sustainable Marketing in Emerging Indian Markets

Research on sustainable marketing in India has grown substantially since 2010. Kumar and Ghodeswar (2015) found that Indian consumers are increasingly concerned about environmental issues, but price sensitivity and limited green product awareness constrain green purchase rates. Singh and Pandey (2012) noted that awareness campaigns by retailers and government bodies can significantly improve eco-label recognition and willingness-to-pay for green products. Studies specific to Tier-2 and Tier-3 Indian cities are sparse. Mishra and Sharma (2014) observed that while green marketing awareness was lower in smaller cities compared to metros, the rate of increase in awareness was significantly higher, suggesting a rapidly evolving landscape. Verma and Chandra (2018) found that in mid-sized cities, peer influence and in-store sustainability cues played a more prominent role than mass media in shaping green purchase attitudes.

2.5 Research Gap

Identified Research Gap: Despite growing literature on sustainable marketing in India, empirical studies focusing specifically on Tier-2 cities such as Prayagraj — particularly examining both retailer adoption and consumer response to sustainability marketing simultaneously — remain absent. This study addresses this gap through a dual-sided mixed-method investigation, providing contextually grounded insights for both academic and practitioner audiences.

3. Research Methodology

3.1 Research Design

This study employs an explanatory mixed-method research design, combining quantitative survey data with qualitative interview insights to achieve a holistic understanding of sustainability marketing dynamics in Prayagraj's retail sector. The mixed-method approach is particularly suited to this investigation as it allows quantitative data to establish patterns and relationships, while qualitative data illuminate the contextual nuances and motivational factors underlying those patterns (Creswell and Plano Clark, 2017).

Research Objectives

- To examine the extent to which sustainability practices are integrated into the marketing strategies of retail businesses in Prayagraj.
- To assess consumer awareness of, and attitudes towards, sustainability-oriented marketing among Prayagraj retail shoppers.
- To identify the key drivers and barriers to sustainable purchase behaviour in the local retail context.

To evaluate the relationship between green marketing communication and consumer brand perception, purchase intention, and loyalty.

- To provide actionable recommendations for retailers and policymakers to promote sustainable marketing in Tier-2 Indian cities.

Research Questions

- RQ1: How are retail businesses in Prayagraj incorporating sustainability into their marketing mix?
- RQ2: What is the level of consumer awareness and receptivity towards sustainable marketing

cues in Prayagraj?

- RQ3: What factors mediate the gap between sustainability awareness and actual purchase behaviour?
- RQ4: Does authentic sustainability communication generate measurably higher brand loyalty than token green marketing?

3.2 Data Collection Methods

Method	Instrument	Sample	Purpose
Consumer Survey	Structured Questionnaire	n = 200	Measure awareness ,attitudes, and purchase behaviour
Retailer Interviews	Semi-structured interview	n = 20	Explore adoption of sustainability practices in marketing mix
Secondary Research	Industry reports, brand disclosures, academic literature	—	Contextualise and triangulate primary findings

Table 1: Research Data Collection Methods

3.3 Sampling Strategy

For the consumer survey, a stratified random sampling technique was employed to ensure representation across age groups, gender, income levels, and residential zones within Prayagraj. Sampling locations included major retail corridors (Civil Lines, MG Road, Naini Industrial Area retail zone), modern trade outlets, and local kirana clusters. The sample size of 200 was determined using Yamane's (1967) formula at a 95% confidence level with a 7% margin of error. For retailer interviews, a purposive sampling approach was used, targeting 20 retail decision-makers across five retail segments: grocery/FMCG (5), apparel/fashion (5), lifestyle/home goods (4), pharmacy/health (3), and food and beverage (3). Interviews averaged 42 minutes in duration and were conducted in both Hindi and English.

3.4 Measurement Instrument The consumer questionnaire comprised 38 items across six constructs: (1) Environmental Awareness (EA, 6 items), (2) Attitude Towards Green Products

(ATGP, 7 items), (3) Perceived Green Marketing Communication Quality (PGMCQ, 6 items), (4) Price Sensitivity (PS, 5 items), (5) Green Purchase Intention (GPI, 7 items), and (6) Brand Loyalty towards Sustainable Brands (BLSB, 7 items). All Likert items used a 5-point scale anchored at 'Strongly Disagree' (1) and 'Strongly Agree' (5). The instrument was pre-tested with 30 respondents and refined accordingly.

3.5 Statistical Tools Used

- Descriptive Statistics: Frequency, percentage, mean, and standard deviation for demographic and attitudinal data.
- Reliability Analysis: Cronbach's Alpha to assess internal consistency of multi-item constructs.
- Correlation Analysis: Pearson correlation to examine relationships between key variables.
- Regression Analysis: Multiple regression to identify predictors of Green Purchase Intention.
- Chi-Square Test: To test association between demographic variables and sustainability awareness.
- ANOVA: One-way ANOVA to compare mean scores across age and income groups.

4. Data Analysis and Findings:

4.1 Demographic Profile of Respondents

The 200 consumer respondents were drawn from diverse demographic segments to ensure representativeness. The profile is summarized below:

Variable	Category	Frequency	Percentage
Gender	Male	108	54.0%
	Female	88	44.0%
	Non-binary / Prefer not to say	4	2.0%
Age Group	18–25 years	72	36.0%
	26–35 years	58	29.0%
	36–45 years	42	21.0%
	46–60 years	22	11.0%
	Above 60 years	6	3.0%
Education	Secondary (10th/12th)	28	14.0%

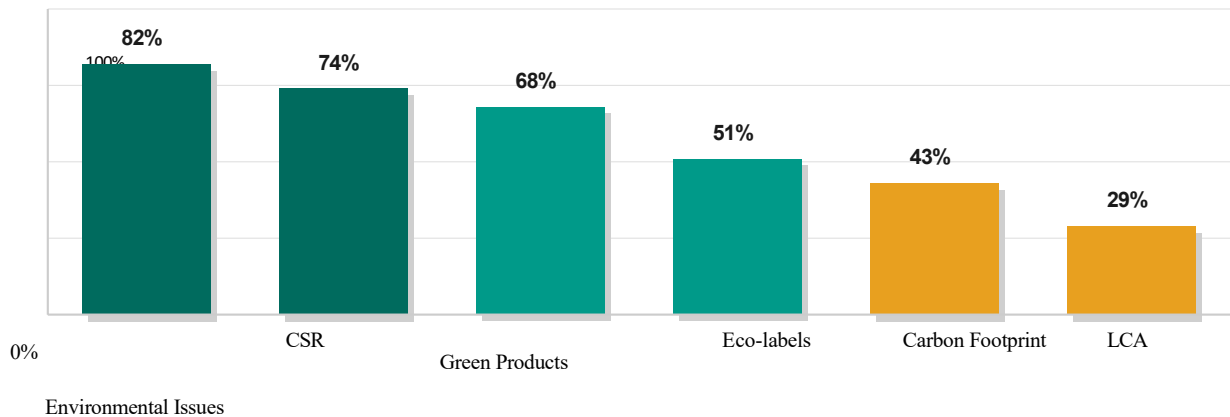
	Undergraduate	86	43.0%
	Postgraduate	68	34.0%
	Professional / Doctoral	18	9.0%
Monthly Income	Below ■20,000	44	22.0%
	■20,001 – ■40,000	76	38.0%
	■40,001 – ■70,000	54	27.0%
	Above ■70,000	26	13.0%

Table 2: Demographic Profile of Consumer Respondents (n=200)

4.2 Consumer Awareness of Sustainability Concepts

Respondents were assessed on their awareness of key sustainability concepts relevant to retail marketing. Results reveal a moderate-to-high awareness of broad concepts, but significantly lower familiarity with specific mechanisms such as eco-labelling schemes and carbon footprint disclosures.

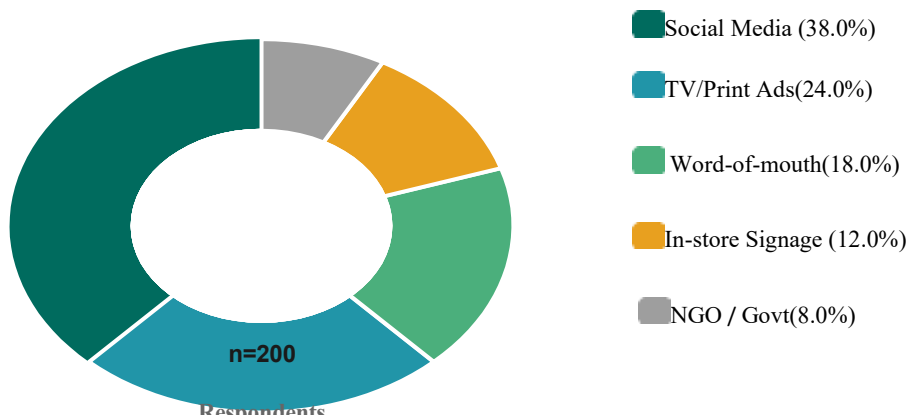
Figure 1: Awareness of Sustainability Concepts Among Consumers (%)



Environmental issues awareness (82%) and CSR awareness (74%) were highest, likely attributable to mainstream media coverage and school curriculum exposure. In contrast, awareness of eco-labelling schemes (51%), carbon footprint disclosures (43%), and lifecycle assessment (LCA) (29%) was substantially lower — indicating that while consumers are broadly aware of sustainability as a concept, they lack the granular knowledge required to evaluate specific green marketing claims critically.

4.3 Sources of Sustainability Information

Figure 2: Primary Sources of Sustainability Information (% Respondents)



Social media emerged as the dominant information source (38%), followed by television and print advertising (24%) and word-of-mouth recommendations (18%). The relatively low prominence of in-store signage (12%) is noteworthy, suggesting that retailers in Prayagraj are not fully utilizing point-of-purchase communication as a sustainability education channel.

4.4 Reliability Analysis

Cronbach's Alpha was computed for all six constructs to assess internal consistency. Values above 0.70 are generally considered acceptable for social science research (Nunnally, 1978).

Construct	No. of Items	Cronbach's Alpha	Interpretation
Environmental Awareness (EA)	6	0.831	Good
Attitude Towards Green Products (ATGP)	7	0.874	Good
Perceived GM Communication Quality (PGMCQ)	6	0.812	Good
Price Sensitivity (PS)	5	0.788	Acceptable
Green Purchase Intention (GPI)	7	0.891	Excellent
Brand Loyalty – Sustainable Brands	7	0.856	Good

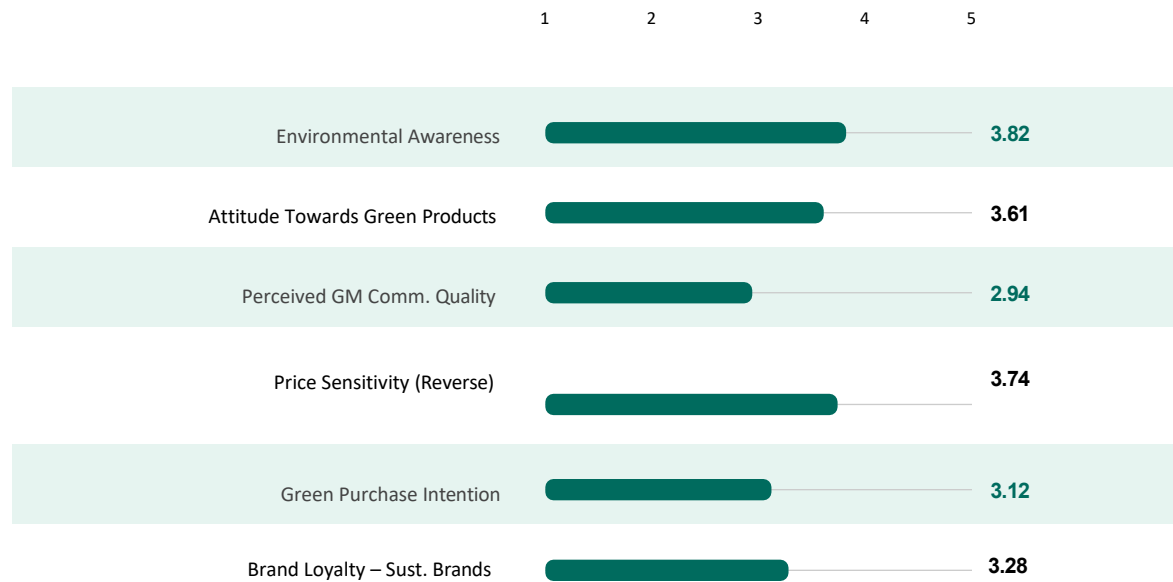
(BLSB)

Table 3: Reliability Analysis — Cronbach's Alpha Values

All six constructs demonstrated acceptable to excellent reliability (α range: 0.788–0.891), confirming the measurement instrument's internal consistency and suitability for further inferential analysis.

Descriptive Statistics — Mean Scores on Key Constructs

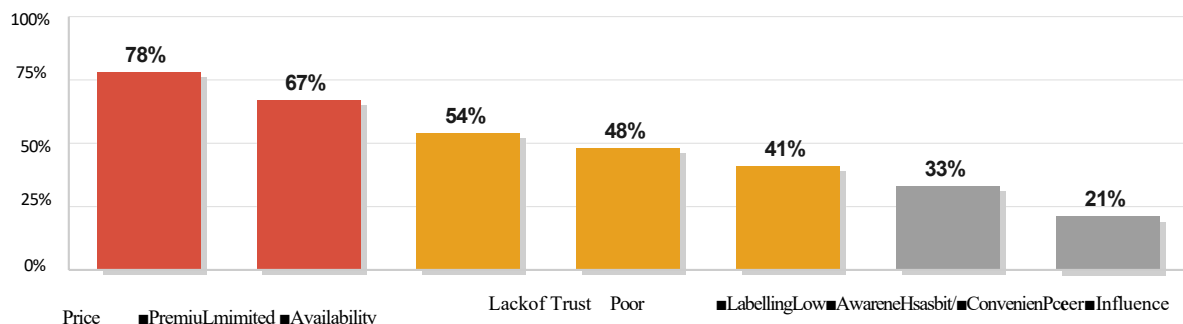
Figure 3: Mean Scores on Key Constructs (Likert Scale: 1–5)



Environmental Awareness scored highest (M=3.82), confirming broad ecological consciousness. However, Green Purchase Intention (M=3.12) and Perceived GM Communication Quality (M=2.94) scored substantially lower, illustrating the awareness–intention and communication–conversion gaps. Price Sensitivity showed a high mean (M=3.74), confirming cost as the primary purchase barrier.

4.6 Barriers to Green Purchase Behaviour

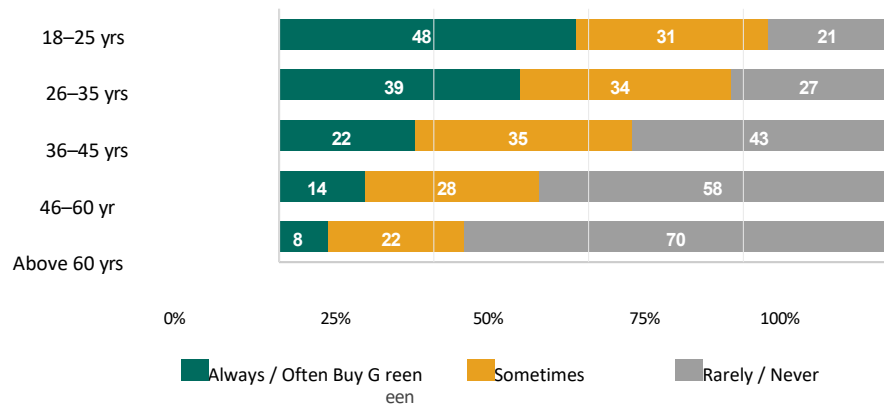
Figure 4: Top Barriers to Green Purchase Behaviour (% Citing as Major Barrier)



Price premium remains the most cited barrier (78%), followed by limited availability of green alternatives (67%) and lack of trust in environmental claims (54%). These findings are consistent with national-level Indian studies (Kumar and Ghodeswar, 2015) and underscore the need for retailers to address both the affordability and credibility dimensions of green marketing.

4.7 Green Purchase Behaviour by Age Group

Figure 5: Green Purchase Frequency by Age Group (%)



A clear age gradient is evident: 48% of consumers aged 18–25 report frequently buying green products, compared to just 8% of those above 60. This confirms that younger consumers are the primary target segment for sustainability marketing in Prayagraj. One-way ANOVA results ($F=14.28$, $p<0.001$) confirm that differences in green purchase frequency across age groups are statistically significant.

4.8 Correlation Analysis

Pearson correlation coefficients were computed between the key constructs. All significant correlations are reported at $p<0.05$ level.

Construct	EA	ATGP	PGMCQ	PS	GPI	BLSB
EA	1.000	0.612**	0.438**	-0.284**	0.547**	0.491**
ATGP	0.612**	1.000	0.503**	-0.318**	0.638**	0.572**
PGMCQ	0.438**	0.503**	1.000	-0.241*	0.584**	0.619**
PS	-0.284**	-0.318**	-0.241*	1.000	-0.463**	-0.387**
GPI	0.547**	0.638**	0.584**	-0.463**	1.000	0.714**
BLSB	0.491**	0.572**	0.619**	-0.387**	0.714**	1.000

Table 4: Pearson Correlation Matrix ($*p<0.05$, $**p<0.01$) | EA=Environmental Awareness · ATGP=Attitude Towards Green Products · PGMCQ=Perceived GM Comm. Quality · PS=Price Sensitivity · GPI=Green Purchase Intention · BLSB=Brand Loyalty Sustainable Brands

All constructs showed statistically significant correlations in the expected directions. Green Purchase Intention had the strongest correlation with Brand Loyalty ($r=0.714$), indicating that consumers who intend to buy green products develop significantly stronger loyalty to sustainable brands. Attitude towards Green Products was the strongest predictor correlate of GPI ($r=0.638$), while Price Sensitivity showed consistent negative correlations with all green marketing constructs.

4.9 Multiple Regression Analysis — Predictors of Green Purchase Intention

A multiple regression analysis was conducted with Green Purchase Intention (GPI) as the dependent variable and Environmental Awareness (EA), Attitude towards Green Products (ATGP), Perceived GM Communication Quality (PGMCQ), and Price Sensitivity (PS) as independent variables.

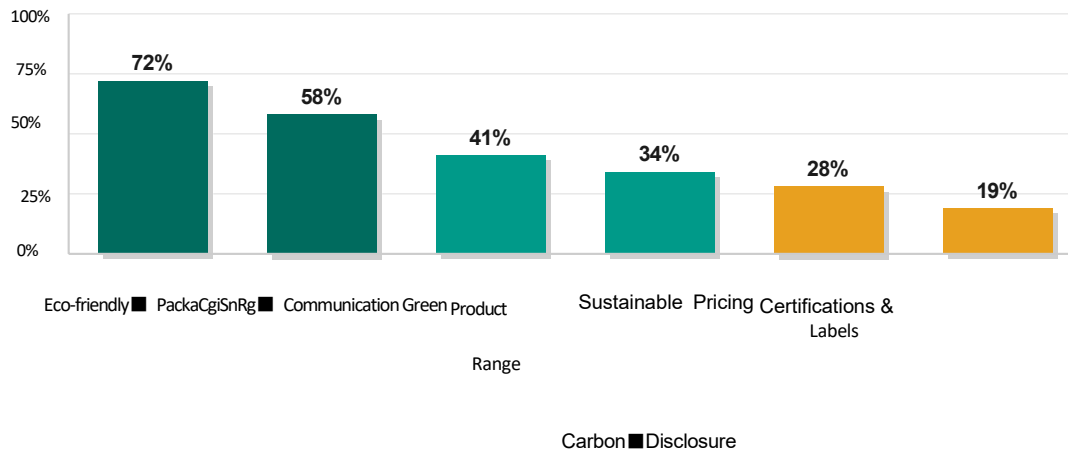
Predictor Variable	Unstd.Coeff f. (B)	Std. Coeff. (β)	t-value	Sig. (p)	VIF
(Constant)	0.824	—	3.214	0.002	—
Environmental Awareness (EA)	0.218	0.196	3.847	0.000**	1.624
Attitude Towards Green Products (ATGP)	0.341	0.328	6.192	0.000**	1.841
Perceived GM Comm. Quality (PGMCQ)	0.287	0.274	5.418	0.000**	1.738
Price Sensitivity (PS)	-0.251	-0.238	-4.836	0.000**	1.512

Table5: Multiple Regression Results Dependent Variable: Green Purchase Intention (GPI) | $R^2=0.612$ | Adjusted $R^2=0.604$ | $F(4, 195) = 77.14, p<0.001$ | ** $p<0.01$

The regression model was statistically significant ($F=77.14, p<0.001$) and explained 61.2% of the variance in Green Purchase Intention ($R^2=0.612$). All four predictors were significant at the 0.01 level. Attitude Towards Green Products ($\beta=0.328$) emerged as the strongest positive predictor, followed by Perceived GM Communication Quality ($\beta=0.274$) and Environmental Awareness ($\beta=0.196$). Price Sensitivity ($\beta=0.238$) was the strongest negative predictor, confirming cost as the primary inhibitor of green purchase decisions. VIF values (all <2.0) confirm the absence of multicollinearity.

4.10 Retailer Adoption of Sustainability in the Marketing Mix

Figure 6: Sustainability Practices Adopted by Retailers (% of 20 Retailers)



Among the 20 retailers surveyed, eco-friendly packaging (72%) and CSR communication (58%) were the most commonly adopted sustainability practices. However, fewer than one in three retailers had implemented certified sustainability labelling (28%), and only 19% made any carbon footprint disclosures. This indicates that retailer sustainability adoption is largely cosmetic — concentrated in visible, low-cost signals rather than embedded, systemic transformation of operations.

4.11 Chi-Square Test — Sustainability Awareness vs. Education Level

A Chi-square test of independence was conducted to examine whether sustainability awareness (High / Moderate / Low) is significantly associated with education level.

Education Level	High Awareness	Moderate Awareness	Low Awareness	Total
Secondary	4 (14.3%)	11 (39.3%)	13 (46.4%)	28
Undergraduate	38 (44.2%)	32 (37.2%)	16 (18.6%)	86
Postgraduate	42 (61.8%)	18 (26.5%)	8 (11.7%)	68
Professional / Doctoral	14 (77.8%)	3 (16.7%)	1 (5.5%)	18
Total	98 (49.0%)	64 (32.0%)	38 (19.0%)	200

Table6: Cross-tabulation

SustainabilityAwarenessbyEducationLevel| $\chi^2(6)=38.74, p<0.001$, Cramér's V=0.311 (moderate association)

The Chi-square test result ($\chi^2=38.74$, $df=6$, $p<0.001$) indicates a statistically significant association between education level and sustainability awareness. Cramér's V of 0.311 suggests a moderate practical effect size. As education level increases, the proportion of consumers with high sustainability awareness rises markedly — from 14.3% among secondary-educated respondents to 77.8% among those with professional or doctoral qualifications.

ANOVA — Green Purchase Intention Across Income Groups

Income Group	n	Mean GPI Score	Std. Dev.	Sig. Diff. from Lowest?
Below Rs.20,000	44	2.74	0.68	—
Rs.20,001 – Rs 40,000	76	3.08	0.71	$p = 0.021^*$
Rs.40,001 – Rs.70,000	54	3.41	0.64	$p < 0.001^{**}$
Above Rs.70,000	26	3.89	0.57	$p < 0.001^{**}$
Overall(3,196)=21.43, $p<0.001$	200	3.12	0.74	—

Table 7: One-Way ANOVA — Green Purchase Intention by Income Group (* $p<0.05$, ** $p<0.01$)

ANOVA results ($F=21.43$, $p<0.001$) confirm that Green Purchase Intention differs significantly across income groups .Post- hoc(TukeyHSD)comparisons show that the lowest income group(BelowRs.20,000)scoredsignificantlyloweronGPIthanallhigherincomegroups.Thisreinforce

the price sensitivity finding: affordability of green products is the primary constraint on green purchase intention at lower income levels.

5. Qualitative Findings – Retailer Perspectives

5.1 Motivations for Adopting Sustainability Marketing

Thematic analysis of the 20 retailer interviews revealed three dominant motivational themes driving sustainability adoption in Prayagraj's retail sector:

Consumer Demand Signal (cited by 14/20 retailers): Several retailers reported that requests for eco-friendly packaging and organic products had increased noticeably post-2020, particularly from younger, educated consumers. One apparel retailer noted: 'Young customers now ask whether our fabrics are organic. Five years ago, no one would ask this.'

Regulatory and Supply Chain Pressure (cited by 11/20): Retailers supplying to national brands reported receiving sustainability compliance mandates from their principals. FMCG distributors in particular cited brand-mandated packaging standards and waste reduction targets.

Competitive Differentiation (cited by 9/20): Some retailers, particularly in the lifestyle and health segments, had proactively adopted sustainability as a positioning tool to distinguish themselves from price-based competition — particularly from e-commerce platforms.

5.2 Barriers to Full Sustainability Integration

When asked about challenges, retailers cited cost of sustainable packaging as the primary barrier (16/20), followed by lack of reliable green suppliers in the local supply chain (13/20), absence of consumer willingness to pay a premium (12/20), and limited awareness about government incentives for green retail practices (10/20).

5.3 Greenwashing Tendencies Observed

Qualitative Observation: A notable finding from retailer interviews was that 8 of 20 retailers (40%) used sustainability terminology in their marketing communications (e.g., 'natural', 'eco-friendly', 'pure') without being able to substantiate these claims with certifications, third-party audits, or supply chain data. This represents a significant greenwashing risk and may contribute to the low consumer trust scores observed in the quantitative findings (M=2.94 for Perceived GM Communication Quality).

6. Discussion

6.1 The Awareness–Behaviour Gap

The central finding of this study — that environmental awareness is high (M=3.82) while Green Purchase Intention remains moderate (M=3.12) — is consistent with the attitude–behaviour gap

documented extensively in the sustainable consumption literature (Follows and Jobber, 2000; Young et al., 2010). In the Prayagraj context, this gap is amplified by structural factors — notably the limited availability of affordable green product alternatives and the nascent state of sustainability certification in local supply chains. The regression analysis reveals that the most powerful lever for bridging this gap is attitude formation ($b=0.328$), not awareness per se. This implies that retailers should invest in experiential marketing, product sampling, and storytelling that shifts consumer attitudes — not merely in informational campaigns that increase awareness. Awareness without attitude change does not reliably translate into purchase intention.

6.2 The Role of Price in Green Purchase Decisions

Price sensitivity ($b=-0.238$) is confirmed as the strongest negative predictor of green purchase intention. This finding has important strategic implications. In a market where 38% of respondents earn below ₹40,000 per month, price premiums on green products — typically 15–40% above conventional equivalents — represent a significant adoption barrier. Retailers must explore strategies to reduce the effective price of green products, including green loyalty programmes, bundled offers, and advocacy for GST rationalisation on certified eco-products.

6.3 Communication Quality as a Loyalty Driver

Perceived GM Communication Quality (PGMCQ) showed the strongest correlation with Brand Loyalty towards Sustainable Brands ($r=0.619$), surpassing even attitude and awareness. This suggests that how retailers communicate their sustainability credentials is at least as important as what they do. The high incidence of unsubstantiated green claims among Prayagraj retailers (40% observed greenwashing tendency) undermines the very loyalty that authentic sustainability communication could generate.

6.4 Age and Education as Moderating Variables

The ANOVA and Chi-square results confirm that age and education are significant moderators of sustainability marketing effectiveness. Young, educated consumers constitute the highest-potential segment: 48% of 18–25-year-olds report frequent green purchases, and awareness rises linearly with education. Retailers targeting college-educated millennials and Gen Z consumers in Prayagraj — via social media channels, campus activations, and digital eco-label communication — are likely to achieve the highest return on sustainability marketing investment.

7. Conclusions

This study has examined the impact of sustainability on modern marketing strategies in Prayagraj's retail sector through a mixed-method investigation involving 200 consumer surveys and 20 retailer interviews. The key conclusions are:

- An awareness–behaviour gap exists: consumers are aware of sustainability issues but their

purchase decisions are constrained by price sensitivity, limited green product availability, and low trust in retailer environmental claims.

- Attitude towards green products is the strongest positive predictor of Green Purchase Intention ($b=0.328$), underscoring the priority of attitude-formation strategies over information-only campaigns.
- Price sensitivity is the dominant barrier ($b=-0.238$), particularly for lower-income consumer segments — necessitating affordability-focused green marketing strategies.
- The quality of sustainability communication is the strongest driver of brand loyalty among green-inclined consumers ($r=0.619$), but 40% of retailers engage in unsubstantiated green claims — creating a credibility crisis that limits marketing effectiveness.
- Younger (18–35) and higher-educated consumers are the highest-potential target segments for sustainability marketing in Prayagraj, displaying significantly higher green purchase frequency and awareness.
- Retailer sustainability adoption is largely cosmetic — centred on eco-packaging and CSR communication — with minimal systemic integration such as third-party certification or supply chain transparency.

8. References

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